

WHAT IS CLAIMED IS:

1. A device for creating a path between a first element and a second element, the path being arranged to include a third element, wherein the first element, the second element, and the third element are included in an optical network, the device comprising:
  - a processor; and
  - a storage device, the storage device being arranged to store computer code for implementing a first mechanism which causes the third element to be identified, the storage device further being arranged to store computer code for implementing a second mechanism which causes a path between the first element and the second element to be computed such that the path traverses the third element, wherein the processor processes the computer codes.
- 10 2. A device according to claim 1 wherein the first element, the second element, and the third element are nodes.
- 15 3. A device according to claim 1 wherein the first element and the second element are nodes, and the third element is a link.
- 20 4. A device according to claim 1 wherein the first mechanism is arranged to identify the third element as being a component of the path.
- 25 5. A device according to claim 4 wherein the first mechanism is further arranged to identify a fourth element as being a component of the path, the fourth element being arranged to be traversed after the third element is traversed.
- 30 6. A device according to claim 5 wherein the path includes a plurality of segments, and wherein the second mechanism is further arranged to compute a first segment associated with the first element and the third element, the first segment being included in the plurality of segments.

7. A device according to claim 6 wherein the storage device is further arranged to store computer code for implementing a third mechanism which causes the fourth element and the second element to be substantially prevented from being included as a 5 part of the first segment.
8. A device according to claim 7 wherein the second mechanism is further arranged to compute a second segment associated with the fourth element, the second segment being included in the plurality of segments, and wherein the third mechanism is arranged 10 to substantially prevent the first element and the second element from being included as a part of the second segment.
9. A device according to claim 8 wherein the second mechanism is further arranged to compute a third segment associated with the second element, the third segment being 15 included in the plurality of segments, and wherein the third mechanism is arranged to substantially prevent the first element and the third element from being included as a part of the third segment.
10. An apparatus for creating a path between a first element and a second element in an optical network, the path being arranged to include a third element, the apparatus comprising:  
20  
a first means for identifying the third element; and  
a second means for computing a path between the first element and the second element such that the path traverses the third element.
- 25
11. An apparatus according to claim 10 wherein the first means identifies the third element as being a component of the path.

12. An apparatus according to claim 11 wherein the first means identifies a fourth element as being a component of the path, the fourth element being arranged to be traversed after the third element is traversed.

5 13. An apparatus according to claim 12 wherein the path includes a plurality of segments, and wherein the second means computes a first segment associated with the first element and the third element, the first segment being included in the plurality of segments.

10 14. An apparatus according to claim 13 further including:  
a third means for substantially preventing the fourth element and the second element from being included in the first segment, wherein the second means computes a second segment associated with the fourth element, the second segment being included in the plurality of segments, and wherein the third mean substantially prevents the first element and the second element from being associated with the second segment.

15 15. An apparatus according to claim 14 wherein the second means computes a third segment associated with the second element, the third segment being included in the plurality of segments, and wherein the third means substantially prevents the first element and the third element from being associated with the third segment.

20 16. An apparatus for routing a path between a source node and a destination node included within a network, the network further including a plurality of elements, the apparatus comprising:

25 an identifier for identifying a set of elements to be included in the path, the set of network elements being included in the plurality of network elements;

a blocker for blocking at least a first element included in the set of elements from being used in generating a first segment of the path; and

30 a path router, the path router being arranged to generate the first segment such that the first segment includes the source node and a second element, the second element

being included in the set of elements, wherein the first segment does not include the first element.

17. An apparatus according to claim 16 wherein the blocker blocks substantially all  
5 elements included in the set of elements except for the second element from being used in generating the first segment of the path.

18. An apparatus according to claim 17 wherein the blocker is arranged to unblock  
the second element after the first segment is generated and to block at least one element  
10 included in the plurality of elements from being included in a second segment of the path,  
the at least one element included in the plurality of elements being a component of the first segment.

19. An apparatus according to claim 18 wherein the path router is further arranged to  
generate the second segment such that the second element is a component of the second  
15 segment.

20. An apparatus according to claim 17 wherein the blocker is further arranged to  
block the source node from being included in the second segment.

21. A method for computing a circuit path between a source node and a destination  
node of an optical network, the method comprising:

identifying at least a first element that is to be traversed by the circuit path  
between the source node and the destination node; and

25 routing a first segment automatically, the first segment being a part of the circuit path,  
wherein when the first element is a node, the source node and the first element are components of the first segment.

22. A method as recited in claim 21 wherein routing the first segment automatically  
30 includes routing the first segment automatically using a shortest path first algorithm.

23. A method as recited in claim 21 further including:  
identifying a second element that is to be traversed by the circuit path between the  
first element and the destination node; and  
5 blocking the second element from being available for use in routing the first  
segment automatically, wherein routing the first segment automatically includes routing  
the first segment to substantially avoid including the second element as a component.
24. A method as recited in claim 23 further including:  
10 blocking the destination node from being available for use in routing the first  
segment automatically, wherein routing the first segment automatically further includes  
routing the first segment to substantially avoid including the destination node as a  
component.
- 15 25. A method as recited in claim 23 further including:  
unblocking the second element such that the second element is available for use in  
routing a second segment automatically, the second segment being a part of the circuit  
path;  
20 blocking the source node from being available for use in routing the second  
segment automatically; and  
routing the second segment automatically, wherein the second element is a  
component of the second segment and the source node is not a component of the second  
segment.
- 25 26. A method as recited in claim 25 further including:  
blocking substantially all components of the first segment from being available  
for use in routing the second segment automatically.

27. A method as recited in claim 26 wherein a terminus of the first segment is a beginning of the second segment, and the terminus of the first segment is not blocked from being available for use in routing the second segment automatically.

5 28. A method as recited in claim 21 wherein when the first element is a first link, the method further includes:  
identifying an initial node of the first link.

10 29. A method as recited in claim 28 wherein routing the first segment automatically includes routing the first segment from the source node to the initial node of the first link when the first element is the first link.

15 30. A method as recited in claim 29 further including:  
routing a second segment automatically, wherein the first link is included in the second segment.

20 31. A method as recited in claim 29 further including:  
identifying a second element that is to be traversed by the circuit path between the first element and the destination node; and  
blocking the second element from being available for use in routing the first segment automatically, wherein routing the first segment automatically includes routing the first segment to substantially avoid including the second element as a component.

25 32. A method as recited in claim 31 further including:  
blocking the destination node from being available for use in routing the first segment automatically, wherein routing the first segment automatically further includes routing the first segment to substantially avoid including the destination node as a component.

33. A computer program product for computing a circuit path between a source node and a destination node of an optical network, the computer program product comprising:

computer code that causes at least a first element that is to be traversed by the circuit path between the source node and the destination node to be identified;

5 computer code that causes a first segment to be routed, the first segment being a part of the circuit path, wherein when the first element is a node, the source node and the first element are components of the first segment; and

a computer-readable medium that stores the computer codes.

10 34. A computer program product as recited in claim 33 wherein the computer code that causes the first segment to be routed includes computer code that causes the first segment to be routed using a shortest path first algorithm.

15 35. A computer program product as recited in claim 33 further including:

computer code that causes a second element that is to be traversed by the circuit path between the first element and the destination node to be identified; and

computer code that causes the second element to be blocked from being available for use in routing the first segment, wherein the computer code that causes the first segment to be routed includes computer code that causes the first segment to be routed to substantially avoid including the second network element as a component.

20 36. A computer program product as recited in claim 35 further including:

computer code that causes the destination node to be blocked from being available for use in routing the first segment, wherein the computer code that causes the first segment to be routed further includes computer code that causes the first segment to be routed to substantially avoid including the destination node as a component.

25 37. A computer program product as recited in claim 35 further including:

computer code that causes the second element to be unblocked such that the second element is available for use in routing a second segment, the second segment being a part of the circuit path;

computer code that causes the source node to be blocked from being available for  
5 use in routing the second segment; and

computer code that causes the second segment to be routed, wherein the second element is a component of the second segment and the source node is not a component of the second segment.

10 38. A computer program product as recited in claim 37 further including:

computer code that causes substantially all components of the first segment to be blocked from being available for use in routing the second segment automatically.

15 39. A computer program product as recited in claim 33 wherein when the first element is a first link, the computer program product further includes:

computer code that causes an initial node of the first link to be identified.

20 40. A computer program product as recited in claim 39 wherein the computer code that causes the first segment to be routed automatically includes computer code that causes the first segment to be routed from the source node to the initial node of the first link when the first element is the first link.

41. A computer program product as recited in claim 40 further including:

computer code that causes a second segment to be routed automatically, wherein  
25 the first link is included in the second segment.

42. A computer program product as recited in claim 33 wherein the computer-readable medium is one selected from the group consisting of a hard disk, a CD-ROM, a DVD, a computer disk, a tape drive, a computer memory, and a data signal embodied in a  
30 carrier wave.